

REMARKS

Applicants confirm the November 1, 2006 telephonic interview by Applicants' representatives, Mr. Raymond Farrell and Mrs. Judy Naamat, with the Examiner, and appreciate the discussion held during the interview regarding Applicants' proposed amendment. Applicants further confirm the October 20, 2006 telephonic interview by Applicants' representative, Mr. Raymond Farrell, with the Examiner, in which it was determined that the Office Action of September 27, 2006 was to be vacated.

Claims 1-27 and 29-57 are currently pending in the application, with Claims 1, 23, 29, 51, 53 and 57 being in independent form. Applicants believe that the Claims are allowable without amending, however to expedite allowance of the Claims, by this amendment, Claims 1, 6, 23, 29, 51, 53 and 57 have been amended to clarify Applicants' invention and patentably distinguish over the prior art. Claims 17 and 45 have been cancelled. No new matter or issues have been introduced by the amendments. Support for the amendments to the Claims are found in the specification, originally filed Claims and drawings. Specifically, support for the phrase "without copying content of the first or second plurality of files" is found in the specification at paragraph [0048], lines 5-6, and in originally filed Claims 17 and 45. Furthermore, FIGS. 3-5 and the corresponding description in the specification illustrate and describe relocation of the second root directory from the second location to the first location "without copying content of the first or second plurality of files."

In view of the amendments above and the remarks to follow, reconsideration and allowance of this application are respectfully requested. Accordingly, early and favorable consideration of this application is respectfully requested.

Hensley et al. describes a computer system having a primary operating system, primary bootstrap files operative to load and run the primary operating system, an emergency boot directory containing a backup copy of the primary operating system, and a removable bootable media containing backup bootstrap files operative to load and run the emergency boot directory if the primary operating system fails to boot and run (see Abstract). The emergency boot directory is formed by making a copy of the primary operating system's executable and configuration files by duplicating each of the original operating system files from the computer hard drive into the emergency boot directory hierarchy (see [0022], lines 1-4). Next, the operating system configuration files that were copied to the emergency boot directory hierarchy are modified to replace any references to the original operating system directory structure with references to the emergency boot directory hierarchy (see [0023]).

The backup bootstrap files are created by generating a copy of the original bootstrap files onto a removable media and modifying the backup bootstrap files to replace any references to the primary operating system directory structure with references to the emergency boot directory. The backup bootstrap files may be modified after being copied or prior to being placed on the bootable removable media (see [0025]). Upon failure of the primary operating system the removable media having the backup bootstrap files is used to boot the computer, including loading and running the backup operating system.

Maurer III et al. describes a data storage system including a storage array having logical volumes or units (LUNs) that can be accessed by one or more clients via a switch (see [0112]). Each respective LUN 1204a-1204n is provided on a discrete and separate physical device. Originally a first LUN 1204a is accessed by the client. LUN 1204a is backed up and restored by first creating a copy of the first LUN 1204a on a second LUN 1204b. LUNs 1204a and 1204b

are mirror synchronized so that writes to the first LUN 1204a are also updated on the second LUN 1204b. At a given time the mirror is split so that writes to the first LUN 1204a are no longer made to the copy on the second LUN 1204b. The second LUN 1204b is a point-in-time copy of the first LUN 1204a. Due to some type of failure, the first logical unit 1204a may no longer be available or reliable, and the client accesses LUN 1204b instead of LUN 1204a. A copy of the second LUN 1204b is created on LUN 1204a (which may have been replaced with a new disk). The client accesses LUN 1204a, so that LUN 1204a is restored.

Applicants' amended Claim 1 recites:

“A method for exchanging a first sub-hierarchy of at least two sub-hierarchies of a hierarchical filesystem (HFS) with a second sub-hierarchy of the at least two sub-hierarchies, the HFS being accessible by at least one processor and having one root directory that is a parentless directory, the method comprising the steps of:

providing for the first sub-hierarchy to include a first root directory located in a first location occupied by the root directory of the HFS and a first plurality of files configured to branch from the first root directory;

providing for the second sub-hierarchy to include a second root directory located in a second location of the HFS that is not occupied by the root directory of the HFS and a second plurality of files configured to branch from the second root directory; and

providing for relocation of the second root directory from the second location to the first location which is occupied by the root directory of the HFS without copying content of the first or second plurality of files.”

In the Advisory Action of July 20, 2006, page 2, last paragraph, line 2-5, the Examiner states that, “Hensley teaches the providing for exchange step is performed without copying content of the first or second plurality of files”, and quotes paragraph [0023] of Hensley et al., specifically, “Next, the operating system configuration files that were copied to the new emergency directory hierarchy are modified, to replace any references to the original operating system directory structure with references to the new emergency boot directory hierarchy (block 62).” While paragraph [0023] describes the setting-up process for configuring the computer

system described by Hensley et al, the setting-up process is irrelevant to the relocation of the second root directory.

Furthermore, in the Final Office Action of May 3, 2006, page 4, lines 8-10, the Examiner states that, “Hensley does not explicitly disclose that said method provides relocation of the second root directory (i.e. relocation of a sub-hierarchy) to the first location.” Accordingly, any absence of copying by Hensley et al. is irrelevant to the process of relocation of the second root directory from the second location to the first location. The Examiner states that “it would have been obvious to a person of ordinary skill in the art to combine the feature of relocating a sub-hierarchy or unit to the first location as taught by Maurer III et al. with the method and system of Hensley et al. so that the combined method and system would provide for relocation of the second root directory to the first location.”

As described in Maurer III et al., the process of restoring the contents of 1204a includes copying contents of LUN 1204a onto LUN 1204b (see [0115], and copying the content to LUN 1204b back onto LUN 1204a, as shown in FIG. 16. Thus, the combination suggested by the Examiner would include copying steps. Accordingly, as stated by the Examiner, Hensley alone does not provide for relocation of the second root directory from the second location to the first location. A combination of Maurer III et al. with Hensley et al. et al. suggested by the Examiner does not provide for “relocation of the second root directory from the second location to the first location ... without copying content of the first or second plurality of files,” as recited by Applicants’ Claim 1.

Furthermore, there is no motivation to combine Maurer III et al. with Hensley et al. In particular, there is no motivation to combine the LUNs 1204a-1204n described by Maurer III et al. with the computer system described by Hensley et al. in order to anticipate Applicants’

disclosure. Additionally, there is no motivation for more than one LUN of LUNs 1204a-1204n, specifically LUN 1204a and LUN 1204b, to be included in one HFS. Maurer III et al. does not describe relocating a sub-hierarchy of an HFS. On the contrary, Maurer III describes restoring a LUN. The LUNs 1204a and 1204b are physically and logically distinct and separate from one another, each LUN having a filesystem that is distinct and separate from the filesystem associated with the other LUN. The file systems of LUNs 1204a and 1204b are not both included in one HFS. Therefore LUNs 1204a and 1204b are not sub-hierarchies of an HFS or equivalent to sub-hierarchies of an HFS.

The distinct and separate characteristics of the LUNs 1204a and 1204b are advantageous to providing the described mirror synchronization between LUNs 1204a and 1204b and the splitting of the mirror synchronization, which provides for generation of a point-in-time copy of LUN 1204a in LUN1204b. When breaking the mirror of LUNs 1204a and 1204b, the LUNs 1204a and 1204b are two separate and distinct LUNs, each having a separate and distinct filesystem on it. Distinct filesystems would not be sub-hierarchies of an HFS having one parentless root directory, as recited in Applicants' Claim 1, and it would not be feasible to include LUNs 1204a and 1204b in the HFS of Hensley et al.

Hence, Applicants' independent Claim 1 is believed to be patentable over Hensley et al. and Maurer III et al., taken alone or in any proper combination. Applicants' Claims 23, 29, 51, 53, and 57 include similar recitations as Claim 1. Accordingly, Applicants believe Claims 23, 29, 51, 53, and 57 to be patentable over Hensley et al. and Maurer III et al., taken alone or in any proper combination. Accordingly, withdrawal of the rejection under 35 U.S.C. §103(a) with respect to Claims 1, 23, 29, 51, 53, and 57 and allowance thereof are respectfully requested.


Additionally, Claim 56 recites that the first and second sub-hierarchies are overlapping. In Hensley et al., the primary operating system and the emergency boot directory are mutually exclusive and do not overlap, since the latter is formed by creating a copy of the former. Hensley et al. does not disclose or suggest that the two copies are overlapping. The file system filter driver acts as a wall between the primary operating system directory structure and the emergency boot directory structure, further necessitating mutual exclusivity between the two systems. In Maurer III et al., the LUNs 1204a and 1204b are provided on distinct and different physical devices. The latter is a copy of the former at the stage shown in FIG. 14, and the former is a copy of the latter at the stage shown in FIG. 16. Maurer III et al. does not disclose or suggest that the two copies at either stage are overlapping. Accordingly, Hensley et al. and Maurer III et al. do not disclose or suggest that the first and second sub-hierarchies are overlapping, as recited by Applicants' Claim 56.

Claims 2-16, 18-22 and 55-56; 24-27; 30-44 and 46-50; 52; and 54 depend directly or indirectly from independent Claims 1, 23, 29, 51, and 53, respectively, and are therefore patentable for at least the reasons given above for independent Claims 1, 23, 29, 51, and 53.

CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that none of the references of record, considered individually or in combination, in whole or in part, disclose or suggest the present invention as claimed. Therefore, all claims now pending in this application, namely Claims 1-16, 18-27, 29-44, and 46-57, are now in condition for allowance. Accordingly, early and favorable consideration of this application is respectfully requested. Should the Examiner believe that a telephone or personal interview may facilitate resolution of any remaining matters, he is respectfully requested to contact Applicants' undersigned agent at the telephone number indicated below.

Respectfully Submitted,



Raymond Farrell
Reg. No. 34,816
Agent for Applicants

CARTER DeLUCA, FARRELL & SCHMIDT, LLP

445 Broad Hollow Road
Suite 225
Melville, N.Y. 11747
Phone: (631) 501-5702
Fax: (631) 501-3526

REF/JN/mg